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PLANETARY PHENOMENA FOR MARCH AND APRIL, 1905.

By Malcolm McNeill.

PHASES OF THE MOON, PACIFIC TIME.

New Moon,	March	5,	$9^h 19^m$ P.M.	New Moon,	April	4,	$3^h 23^m$ P.M.
First Quarter,	"	14,	1 0 A.M.	First Quarter,	"	12,	1 41 P.M.
Full Moon,	"	20,	8 56 P.M.	Full Moon,	"	19,	5 38 A.M.
Last Quarter,	"	27,	1 35 P.M.	Last Quarter,	"	26,	3 14 A.M.

The Sun crosses the equator from south to north and the vernal equinox occurs about 11 P.M. March 20th, Pacific time.

The second eclipse of the year occurs on March 5th, and is an annular eclipse of the Sun. No portion of it will be visible in the United States. The path of the central eclipse lies in the Southern Ocean, and the only large island crossed is Australia.

Mercury is a morning star at the beginning of March, too close to the Sun to be seen. It comes to conjunction on March 9th and becomes an evening star, but does not get far enough away from the Sun to be seen in the evening twilight until the last ten days of the month. From about March 20th until the middle of April it remains above the horizon an hour or more after sunset, and may be seen under good weather conditions in the evening twilight near the western horizon. It reaches its greatest eastern elongation, 19°, on April 4th, and then sets considerably more than an hour and a half after the Sun. The few days about this time afford the best opportunity of the year for seeing this planet. The number of days during which it may be easily seen is not as great as it is at other times, as the elongation is at best not up to the average, since the planet passes perihelion only nine days before greatest elongation, and its motion in space is most rapid when at perihelion. It comes to inferior conjunction with the Sun on April 23d and will for the following two months be a morning star.

Venus will still remain an evening star until April 27th. It then passes inferior conjunction with the Sun and becomes a morning star. On March 1st it sets nearly four hours after sunset. The interval shortens up about an hour during March and diminishes still more rapidly in April, but does not get below one hour until nearly April 20th. However, the planet may be seen until within a very few days of conjunction on account of its nearness to us and consequent brightness. The time of maximum brilliancy comes about half-way between greatest elongation and inferior conjunction, on March 21st, and for a number of weeks the planet is bright enough to be seen in full daylight. It will not be very easy to find it while the Sun is up, unless one knows just where to look for it, but it is fairly conspicuous when once found.

Mars as it draws near its opposition in May becomes more and more prominent. It rises at about 11:30 P.M. on March 1st, at about 10 P.M. on April 1st, and before 8 P.M. at the end of the month. During the two-months period its distance diminishes from ninety-two to fifty-two millions of miles, and there will be in consequence more than a threefold increase in brightness. It will be by far the most conspicuous object in the southeastern sky, just as *Jupiter* and *Venus* hold similar positions in the western sky in the evenings. Its motion among the stars during the spring and summer months affords a good opportunity for the study of the retrograde motion of a planet near opposition. On March 1st it is in *Libra,* and during the month it keeps up its general eastward motion, moving about 5° toward *Scorpio.* This eastward motion gradually ceases, and on April 2d it begins to retrograde (move westward). By the end of the month it is back again near to the place it occupied on March 1st, about 1° south. This retrograde motion will last until the middle of June, and then the planet will be about 3° south of the place it held among the stars on February 1st.

Jupiter is still an evening star, but the Sun is gradually overtaking it in their common eastward motion. It does not set until nearly 10 P.M. on March 1st, but by the end of April the planet is nearly in conjunction with the Sun and sets about ten minutes after sunset. It cannot be easily seen more than a few days after the middle of April.

Saturn is a morning star, rising about half an hour before sunrise on March 1st. This interval increases to nearly three hours before the end of April. It moves about 5° east and north in the constellation *Capricorn.*

Uranus rises at about 3 A.M. on March 1st, and at about

11 P.M. on April 30th. It is nearly stationary in the constellation *Sagittarius,* and begins to retrograde on April 8th.

Neptune is almost exactly opposite *Uranus,* rising when the latter is setting, and *vice versa.* It is in the constellation *Gemini,* and is above the horizon while *Uranus* is below.

VARIABLE STAR NOTES.

By Rose O'Halloran.

After an absence of some years, the interesting maxima of *o Ceti,* or *Mira,* The Marvelous, have at length returned to the evening sky. As only new stars rival its range of variation, from ninth to second or third magnitude, its recent visibility has no doubt been widely observed. The minimum of October last was below the average, and it will be of interest to note if the coming maximum be greater or less than usual. Six observations, extending from October 3d to November 5th, showed that the companion-star of ninth magnitude was about two tenths brighter than *Mira.* On November 8th a hazy reddish aspect was noticeable in the variable, and, though the companion was more sharply defined, they seemed of equal brightness.

The magnitudes of adjacent stars given in a chart of the *Durchmusterung* were used for comparison during the subsequent rise to visibility.

1904.	
Nov. 27.	Of 8.8 magnitude.
Dec. 2.	Of 8.5 magnitude.
Dec. 16.	Of 8th magnitude.
Dec. 24.	Of 7.7 magnitude.
1905.	
Jan. 1.	About 7½ magnitude. It is reddish and visible in an opera-glass.
Jan. 3.	7.3 magnitude. Dimmer than 71 *Ceti.*
Jan. 10.	Greatly increased in brightness. Brighter than 71 *Ceti,* and nearly as bright as 70 *Ceti.* Probably of 6th magnitude.
Jan. 17.	Brighter than 67 or 69 *Ceti,* classed as 5.5. Less than *S Ceti.*